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Dear Doctor Harper:

Twenty-four days ago you asked me to prepare an outline for a one hour and a two hour seminar on perinatal problems. No doubt you think I have forgotten your request, but no, here they are. First, there is an outline for a seminar which might take two or three days. The subheadings suggest the direction which the shorter seminars may take. The two hour seminar deals with all three specialties involved, while the one hour seminar is focused entirely on the infant during birth. Please feel free to criticize them frankly.

Thank you very much for the reprint on Hospital Care of the Premature Infant. It is clear, concise and to the point.

Enclosed also are a few pages of some personal thoughts on the Perinatal Problem. Back in January, Mr. Leonard Mayo asked me to put my thoughts on paper and I have been struggling with it ever since. I have submitted it to him along with a request for consideration of some kind of a grant. This morning I have an interview with Dr. Willard C. Rappaport who dispenses the Macy Foundation money. Your suggestion of the slight possibility of the Childrens Bureau Fellowship is being kept in mind.

Thank you very much for your efforts in my behalf. I hope to show you my appreciation this coming fall, in concrete form.

Sincerely,

Virginia Apgar, M. D.
Professor of Anesthesiology

VA:EHD
Encl.

Suggestions for an Unlimited Seminar on
Perinatal Problems.

Controversial subjects

I. Obstetrical factors.

A. Prevention of prematurity

1. Endocrine factors in patients with habitual abortion
2. Pharmacological methods of inhibiting (?) labor
3. Treatment of patients with bleeding in the 2nd trimester
4. Treatment of toxemias

B. Prevention of postmaturity

1. Pharmacological induction of labor
2. Diagnosis of dysproportion
3. X-ray diagnosis of fetal age and size
4. Comparison of gestional age and weight of infant

C. Conduct of labor and delivery

1. Administration of antepartum oxygen
2. Maternal acid-base balance during labor
3. Fluids and nutrition during labor
4. Diagnosis of fetal distress
5. Early induction of labor in diabetic mothers
6. Early induction of labor in Rh sensitized mothers.
7. Management of posterior positions
8. The place of version and breech extraction
9. Fundal pressure vs. outlet forceps extraction
10. Causes of asphyxia during delivery
11. The case for expeditious deliveries
12. Caesarian section as conservative therapy
13. Advantages and disadvantages of low flap incision in caesarian section

14. Position of the infant in relation to the placenta
15. The cord, to ~~clamp~~^{clamp} or not to clamp properly
16. Head-down position of infant during delivery

II. Anesthetic factors.

A. Maternal pain relief

1. The value of prenatal classes
2. The place of hypnosis in obstetrical anesthesia
- 3/ Psychological advantages and disadvantages of being conscious during delivery
4. The control of apprehension; barbiturates or tranquillizers
5. The control of pain; opiates, regional or inhalation techniques
6. The effect of anesthetic agents on the uterine blood flow
7. Objective measurements of pain
8. Individual selection of drugs and doses
9. The full stomach
10. How to relax a tight uterus
11. Anesthesia for Caesarian section
12. Prevention of spinal headaches

B. Anesthesia and the fetus

1. Transfer of anesthetic drugs and relaxants across the placenta
2. Intrauterine environment - before labor
3. Intrauterine environment - during labor
4. Fetal changes with asphyxia

I .. Pediatric factors:

A. In the delivery room

1. The normal asphyxia of birth
2. The place of placental transfusion
3. Position of the infant during and after delivery
4. Methods of obtaining a free airway

5. When to assist ventilation
6. How to assist ventilation
7. Direct laryngoscopy as a diagnostic measure
8. Value of mechanical devices in resuscitation
9. Diagnosis of operable anomalies
10. Value of routine gastric aspiration
11. Biochemical adjustments at birth
12. Circulatory, respiratory and thermal adjustments at birth
13. Methods of evaluating condition of newborn infant

B. In the nursery

1. Care of premature infant
2. Value of rooming-in plans
3. Neonatal biochemical adjustments
4. Diagnosis and treatment of respiratory distress
5. Cardiac failure in respiratory distress
6. Prevention of infection

IV. Education factors:

A. Division of responsibility in the delivery room

1. Education of pediatricians in delivery room problems
2. Education of anesthesiologists in obstetrical problems
3. Education of obstetricians in pain relief and resuscitation
4. Education of obstetrical nurses in resuscitation

B. Education of the general practitioner

C. Education of the nurse midwife

Perinatal Problem

One Hour Seminar

1. Normal intrauterine environment
2. Factors in fetal asphyxia
 - a. Uterine blood flow
 - b. Cord compression
 - c. Placental separation
3. Diagnosis of fetal asphyxia
4. Obstetrical management of fetal asphyxia
5. Pain relief for delivery
6. Resuscitation as treatment for asphyxia of the infant
 - a. Prompt ventilation
 - b. Free airway
7. Results of fetal asphyxia
8. Diagnosis and treatment of anomalies
9. Education of delivery room personnel in resuscitation

Perinatal Problem

(Onset of Labor to 48 Hrs. after Birth)

Two Hour Seminar

A. Obstetrical factors

1. Prevention of prematurity
2. Prevention of postmaturity
3. Prevention of maternal acidosis
4. Conduct of labor
5. Methods of minimizing asphyxial factors by expeditious delivery
 - a. Uterine blood flow
 - b. Cord compression
 - c. Placental separation

B. Anesthetic factors

1. Minimal use of indicated drugs
2. Individually selected doses
3. Effect of anesthetic agents on labor
4. Effect of anesthetic agents on fetus
5. Regional vs. general anesthesia

C. Pediatric factors

1. Questionable value of placental transfusion
2. Establishment of a free airway
3. Position of infant during delivery
4. Assistance to ventilation
5. Newborn environment
6. Results of maternal and fetal asphyxia

The Perinatal Problem.

The highest death rate during viable human life occurs from the onset of labor to two days after birth. An unknown amount of temporary or permanent damage to tissue metabolism results from complications of delivery in infants who survive. This is evidenced by derangements of pulmonary, cardiac, renal, cerebral, hepatic and endocrine functions. The results of animal experiments are being duplicated in the study of human newborn infants, especially with respect to pulmonary, cardiac and renal functions. The multiple factors which contribute to this morbidity and mortality are well recognized, but a concerted effort to correct the errors in the conduct of labor and delivery, and the immediate care of the newborn infant has been lacking.

Three groups of physicians are directly concerned with the perinatal period; the obstetrician, the anesthesiologist and the pediatrician. In the past, there has been little communication among them. The obstetrician perforce has had to manage pain relief and labor without assistance, and has fallen into certain rigid grooves of thought and practice. The pediatrician has not considered the newborn infant to be his responsibility until he or she reaches the nursery. Only recently have the anesthesiologists begun to accept responsibility for pain relief during labor, and resuscitation of the infant when indicated, and to learn enough obstetrics and pediatrics to make them useful members of the team. The economic aspects of an obstetric practice for the pediatrician and anesthesiologist have been deterrents to progress in this field. A splendid liason challenge among these three specialties awaits solution.

The anesthesiologist is in a unique position to assist in this solution. Because of his experience with respiratory obstruction, hypoventilation and apnea, it has been accepted that he should lead the way in newborn resuscitation. Also, because of his experience with surgical pain relief, he is well acquainted with reaction of patients to the many drugs used for pain relief in obstetrics. In addition, research in anesthesiology has led to the development of many useful techniques such as micromanometric blood gas analysis, cineangiography of newborn infants, fetal electrocardiography, etc.

In 1957, for the first time, I had an opportunity to take part in three Public Health meetings; in Connecticut, New York City and Florida. There seemed to be a genuine interest in neonatal problems and an appreciation that this field has been neglected. A program of education and development in this field should be effected as soon as possible. A number of separate efforts are already under way and making good progress: i.e., the Subcommittee on Infant Mortality, Medical Society of the County of New York; the Committee on the Fetus and Newborn, American Academy of Pediatrics; The New York City Department of Health Postgraduate Assembly, etc. Co-ordination of these efforts should result in a saving of time and money, and a wider distribution of the results.

Such programs could be implemented in several ways.

- 1) Trouble-shooting in areas in the United State with high perinatal mortality. Physicians with sound clinical training in obstetrics, anesthesia and pediatrics, and with a public health background would be ideal to transform public health principles into action at the local or personal level. Such physicians could live in areas

with high perinatal mortality for several weeks and observe closely the practices surrounding the perinatal period. Appropriate changes would be advised and follow-up visits to these areas would assure continued public health interest. It will not be difficult to find such physicians if an educational effort is begun now.

2) A neonatal team would undertake to put on panel discussions in conjunction with county and state medical meetings.

3) A series of short movies could be prepared on the various aspects of the perinatal period; i.e., conduct of labor, pain relief, immediate care of the newborn, premature nursery care.

A broad approach to the problem will inevitably open up new possibilities and methods for teaching.

In some ways I feel well qualified to institute a national program along these lines. After graduating from P and S in 1933 (A.O.A.) and a two year surgical residency at the Presbyterian Hospital in New York City, I chose the field of anesthesia for economic reasons. After a year of graduate work with Dr. Ralph M. Waters and Dr. E. A. Rovenstine, I had the opportunity to develop a division of medical anesthesiology under the Department of Surgery at the Presbyterian Hospital.² This was begun in 1938. In the next eleven years, the number of physicians in training or teaching anesthesiology under my direction grew from one to 32. Since 1949, when Dr. E. M. Papper became the executive officer of the newly created Department of Anesthesiology at Columbia University College of Physicians and Surgeons, this number has increased further, to 52 physicians.

Since 1949, I have had the rare opportunity of spending as much time as possible on the obstetrical service. Over 16,000 deliv-

eries have been observed personally, and over 100 residents in anesthesiology have been given personal teaching in obstetrical and newborn problems. Pediatric and obstetric residents have also received less formal instruction. With the assistance of the obstetric, pediatric and anesthesiologic departments at P & S, and U.S.P.H.S. grants, I have developed a neonatal research laboratory, adjoining the delivery rooms of the Sloane Hospital for Women. Almost daily, new information is being obtained as to acid-base imbalance during birth and respiratory and circulatory adjustments after birth. Techniques of cineradiography with an image intensifier, micromanometry of blood gases, and oxygen polarography have been refined. Drs. Duncan A. Holaday, L. Stanley James and Irwin M. Weisbrot have been most active associates in this field.

In order to gain a broader view of the Public Health field as it now exists, I am spending a sabbatical leave at the Johns Hopkins School of Hygiene and Public Health under the guidance of Dr. Paul Harper. I hope to attain the degree of M.P.H. and with another leave of absence, a D.P.H. relating to perinatal mortality as a public health problem.

There are at least four possible channels for expansion of perinatal mortality as a public health problem: 1) The U.S.P.H.S.; 2) The Childrens Bureau under the Department of Health and Economic Welfare; 3) a W.H.O. program and 4) a division of Perinatal Health at the School of Public Health, Columbia University, under Dr. Harold Brown's direction. A decision as to a future course must await further knowledge of the field.